REMARKS

Summary of April 17, 2009 Teleconference with Examiner

On April 2, 2009, the United States Patent and Trademark Office issued a Notice of Non-Compliant Amendment indicating that the Amendment in Response to September 12, 2008 Office Action, Petition for Three Month Extension of Time, and Supplemental Information Disclosure Statement which applicants filed on March 12, 2009, was unsigned or not signed in accordance with 37 C.F.R. §1.4.

In an April 17, 2009 telephone conference between Legal Instruments Examiner Nichele Peterson and Lenh Mong of the undersigned's office, Ms. Mong explained that the Amendment was indeed signed, and referred the Examiner to page 24 of the Amendment. Examiner Peterson reviewed the file and asserted that the signature on page 24 applies to the Supplemental Information Disclosure Statement submission only and that the Amendment and Supplemental Information Disclosure Statement should be two separate submissions. Examiner Peterson requested that applicants resubmit the March 12, 2009 Amendment including page 24 which contains the signature. Examiner Peterson stated that there is no need to resubmit the Supplemental Information Disclosure Statement and exhibits with the response to the April 2, 2009 Notice.

Ms. Mong then asked the Examiner to clarify Item 4 of the Notice, which did not indicate which component of the Amendments to the claims was non-compliant. Examiner Peterson replied that Item 4 should be disregarded and that only Item 5 applies.

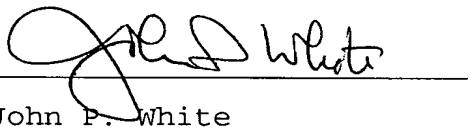
Response to the April 2, 2009 Notice of Non-Compliant Amendment

In response to the April 2, 2009 Notice of Non-Compliant Amendment, applicants submit that a signature was provided on page 24 of the Amendment in Response to September 12, 2008 Office Action, Petition for Three Month Extension of Time, and Supplemental Information Disclosure Statement which applicants filed on March 12, 2009. As requested by Examiner Peterson, however, applicants submit herewith as **Exhibit B** a courtesy copy, excluding the Supplemental Information Disclosure Statement and exhibits, of the Amendment in Response to September 12, 2008 Office Action, Petition for Three Month Extension of Time, and Supplemental Information Disclosure Statement, i.e. applicants are including pages 1-20 and page 24 of the March 12, 2009 Amendment. Accordingly, applicants respectfully request that the Examiner enters the March 12, 2009 Amendment as filed.

If a telephone interview would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the number provided below.

No fee is deemed necessary in connection with the filing of this Amendment. If any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,



John P. White
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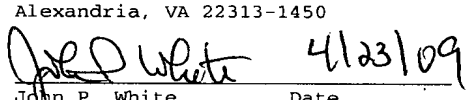
I hereby certify that this correspondence is being deposited this date with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to:

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450



4/23/09

John P. White Date
Reg. No. 28,678

EXHIBIT A

COMMUNICATION CONFIRMING APRIL 17, 2009 TELEPHONE CONFERENCE WITH EXAMINER AND COMMUNICATION IN RESPONSE TO APRIL 2, 2009 NOTICE OF NON-COMPLIANT AMENDMENT

Applicants: Stan Gronthos et al.
Serial No.: 10/551,162
Filed: March 29, 2004

2251/15170

COOPER & DUNHAM

JTW/BJN/LM

APR 27 2009

APR - 6 2009

DOCKET CLERK

Notice of Non-Compliant Amendment (37 CFR 1.121)

Application No.	Applicant(s)	
10/551,162	GRONTHOS ET AL.	
	Art Unit	
	2600	

The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

The amendment document filed on *17 March, 2009* is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

NON-COMPLIANT Amendment Due 5-2-09
2MO 6-2-09
3MO 7-2-09
4MO 8-2-09
5MO 9-2-09
6MO 10-2-09
Report O.A 4-16-09

☐ 1. Amendments to the specification:
- ☐ A. Amended paragraph(s) do not include markings.
- ☐ B. New paragraph(s) should not be underlined.
- ☐ C. Other _____.

☐ 2. Abstract:
- ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
- ☐ B. Other _____.

☐ 3. Amendments to the drawings:
- ☐ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
- ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
- ☐ C. Other _____.

☒ 4. Amendments to the claims:
- ☐ A. A complete listing of all of the claims is not present.
- ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
- ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
- ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
- ☐ E. Other: _____.

☒ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4): For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance, or a drawing submission (only) If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.

2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a Quayle action. If any of above boxes 1 to 4 are checked, the correction required is only the corrected section of the non-compliant amendment in compliance with 37 CFR 1.121.

Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

Failure to timely respond to this notice will result in:

Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or

Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE), if applicable /NICHELE PETERSON/ Telephone No: (571)272-7273

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD	Application or Docket Number 10/551,162	Filing Date 09/28/2005	☒ To be Mailed

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
			TOTAL			TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED – PART II

AMENDMENT 03/17/2009	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 39	Minus	** 39	= 0	X $26 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	X $110 =	0	OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/NICHELE PETERSON/

UNITED STATES PATENT AND TRADEMARK OFFICE

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23432 e 04/02/2009

COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

Paper No.

Application No.:	**10/551,162**	**Date Mailed:**	**04/02/2009**
First Named Inventor:	Gronthos, Stan,	Examiner:	BELYAVSKYI, MICHAIL A
Attorney Docket No.:	75090/JPW/JW (75190)	Art Unit:	1644
Confirmation No.:	3174	Filing Date:	09/28/2005

Please find attached an Office communication concerning this application or proceeding.

Commissioner for Patents

PTO-90c (Rev.08-06)

EXHIBIT B

COMMUNICATION CONFIRMING APRIL 17, 2009 TELEPHONE CONFERENCE WITH EXAMINER AND COMMUNICATION IN RESPONSE TO APRIL 2, 2009 NOTICE OF NON-COMPLIANT AMENDMENT

Applicants: Stan Gronthos et al.
Serial No.: 10/551,162
Filed: March 29, 2004

Docket No. 2251/75190/JPW/BJA/LM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Stan Gronthos et al.

Serial No. : 10/551,162 Examiner: M.A. Belyavskyi

Filed : March 29, 2004 Group Art Unit: 1644

For : PERIVASCULAR MESENCHYMAL PRECURSOR CELLS

COPY

Mail Stop Amendment
COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

Date: March 12, 2009

Sir:

Transmitted herewith is an amendment to the above-identified application.

_____ Small entity status of this application under 37 C.F.R. §1.9 and §1.27 has been previously established.

_____ A verified statement to establish small entity status under 37 C.F.R. §1.9 and §1.27 is enclosed.

_____ No additional fee is required.

The filing fee is calculated as follows:

	Number after Amend-ment		Highest Number Previously Paid For[1]		Number of Extra Claims Presented		RATE Small Entity	RATE Other Entity		FEE Small Entity	FEE Other Entity
Total Claims	39	-	* 39	=	*** 0	x	$26	$52	=	0	
Indepen-dent Claims	2	-	** 2	=	*** 0	x	$110	$220	=	0	
Multiple Dependent Claim(s) Presented For First Time _____Yes __X__No							$195	$390	=	0	
							TOTAL ADDITIONAL FEE			$ 0	

[1] The "HIGHEST NUMBER PREVIOUSLY PAID FOR" (Total or Independent) is the highest of the "NUMBER AFTER AMENDMENT" in any prior amendment or the number of claims originally filed.
* If the "HIGHEST NUMBER PREVIOUSLY PAID FOR" is less than 20, write "20" in this space.
** If the "HIGHEST NUMBER PREVIOUSLY PAID FOR" is less than 3, write "3" in this space.
*** If the difference between the "NUMBER AFTER AMENDMENT" and the "HIGHEST NUMBER PREVIOUSLY PAID FOR" is less than "0", write "0".

COPY

Applicant(s): Stan Gronthos et al.

Serial No. : 10/551,162

Filed : March 29, 2004

Amendment Transmittal Letter
Page 2

The following are also enclosed:

_____ One additional copy of this Amendment Transmittal Letter

__X__ Return Receipt Postcard

__X__ An Information Disclosure Statement, including Form PTO-1449
(Copies of citations included: Yes X No_____
and a fee of $ 180.00 included)

__X__ A Petition for an Extension of Time, including a fee of $ 555.00 for a Petition for 3 Month(s) Extension of Time

_____ Other (identify): _____

THE TOTAL FEE DUE IS $ 735.00.

__X__ A check in the amount of $ 735.00 is enclosed.

_____ Please charge Deposit Account No. _____ in the amount of $ _____.

__X__ The Commissioner is hereby authorized to charge any additional fees required or credit any overpayment to Deposit Account No. 03-3125 as follows:

__X__ Fees under 37 C.F.R. §1.16 for the presentation of extra claims
__X__ Patent application processing fees under 37 C.F.R. §1.17

Respectfully submitted,

John P. White
Registration No. 28,678
Attorney for Applicant(s)
Cooper & Dunham LLP (Customer #23432)
30 Rockefeller Plaza
20th Floor
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(212) 278-0400

I hereby certify that this correspondence is being deposited this date with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to:
Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

3/12/09
John P. White Date
Reg. No. 28,678

JPW Rev. 10-2-08

Dkt No. 2251/75190/JPW/BJA/LM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Stan Gronthos et al.

Serial No. : 10/551,162 Group Art Unit: 1644

Filed : March 29, 2004 Examiner: Michail A. Belyavskyi

Title : PERIVASCULAR MESENCHYMAL PRECURSOR CELLS

30 Rockefeller Plaza, 20th Fl.
New York, New York 10112
March 12, 2009

COPY

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT IN RESPONSE TO SEPTEMBER 12, 2008 OFFICE ACTION, PETITION FOR THREE MONTH EXTENSION OF TIME AND SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

This Amendment is filed in response to an Office Action issued by the U.S. Patent and Trademark Office on September 12, 2008 in connection with the above-identified application. A response to the September 12, 2008 Office Action was due December 12, 2008. Applicants hereby petition for a three-month extension of time. The fee for a three-month extension of time for a small entity is FIVE HUNDRED AND FIFTY FIVE DOLLARS ($555.00) and a check including this amount is enclosed. With a three-month extension of time, a response to the September 12, 2008 Office Action is now due March 12, 2009. Accordingly, this Amendment is being timely filed.

Please amend the subject application as follows:

Amendment to the claims begins on page 3 of this paper.

Remarks begin on page 11 of this paper.

The Supplemental Information Disclosure Statement begins on page 21 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-67. (Cancelled)

68. (Currently amended) ~~An enriched~~ A population of mesenchymal precursor cells (MPCs) enriched for 3G5 positive cells, wherein such 3G5 positive cells ~~(MPCs) wherein the MPCs are enriched from a perivascular niche within a vascularised tissue source, are positive for an early perivascular cell marker, and~~ can give rise to progeny consisting of two or more tissue types.

69. (Previously presented) The enriched population of claim 68 wherein the MPCs are enriched from a perivascular niche within a non-haemopoietic vascularised tissue.

70. (Previously presented) The enriched population of claim 68 wherein the MPCs are enriched from a tissue of the group consisting of skin, liver, kidney, heart, adipose tissue, teeth, dental pulp, retina, brain, hair follicles, intestine, lung, spleen, lymph node, thymus, pancreas, bone, ligament, bone marrow, tendon and skeletal muscle.

71. (Currently amended) The enriched population of claim 68 wherein the MPCs are also positive for one or more of the perivascular cell markers ~~3G5,~~ MUC18/CD146~~,~~ and

alpha-smooth muscle actin.

72. (Previously presented) The enriched population of claim 68 wherein the enriched population comprises at least 0.1% STRO-1^{bri} MPCs.

73. (Previously presented) The enriched population of claim 68 wherein the enriched population comprises at least 1% STRO-1^{bri} MPCs.

74. (Previously presented) The enriched population of claim 68 wherein the MPCs are positive for the markers STRO-1^{bri}, MUC18/CD146, and alpha-smooth muscle actin.

75. (Previously presented) The enriched population of claim 68 wherein at least 15% of the total cells of the population are positive for the marker 3G5.

76. (Previously presented) The enriched population of claim 68 wherein at least 30% of the total cells of the population are positive for the marker 3G5.

77. (Currently amended) The enriched population of claim 68 wherein the MPCs are positive for one or more markers selected from ~~form~~ the group consisting of THY-1, VCAM-1, ICAM-1, PECAM-1, CD49a/CD49b/CD29, CD49c/CD29, CD49d/CD29, CD29, CD61, integrin beta 5, 6-19, thrombomodulin, CD10, CD13, SCF, STRO-1^{bri}, PDGF-R, EGF-R, IGF1-R, NGF-R, FGF-R and Leptin-R (STRO-2).

78. (Previously presented) The enriched population of claim 68 wherein the MPCs are negative for the haemopoietic markers CD45, CD34, and glycophorin A.

79. (Previously presented) The enriched population of claim 68 wherein the MPCs have the capacity to be induced to differentiate to form progeny cells comprising one or more of at least osteoblast, odontoblast, dentin-producing, chondrocyte, tendon, ligament, cartilage, adipocyte, fibroblast, marrow stroma, osteoclast- and hematopoietic-supportive stroma, cardiac muscle, smooth muscle, skeletal muscle, pericyte, vascular, epithelial, glial, neuronal, astrocyte or oligodendrocyte cell type.

80. (Previously presented) An enriched population of claim 68 comprising at least 0.1% MPCs capable of forming a clonogenic colony.

81. (Previously presented) An enriched population of claim 68 comprising at least 1% MPCs capable of forming a clonogenic colony.

82. (Withdrawn) A differentiated progeny cell obtained from the enriched population of claim 68 wherein the progeny cell is an osteoblast, odontoblast, dentin-producing, chondrocyte, tendon, ligament, cartilage, adipocyte, fibroblast, marrow stroma, osteoclast- and hematopoietic-supportive stroma, cardiac muscle, smooth muscle, skeletal muscle, pericyte, vascular, epithelial, glial, neuronal, astrocyte or

oligodendrocyte cell.

83. (Withdrawn) A population of cells that represents the progeny of the enriched population of claim 68 after the enriched population has been cultured and/or expanded.

84. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the cultured and/or expanded population comprises at least 5% of cells which express the marker STRO-1^{bri}.

85. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the cultured and/or expanded population comprises at least 10% of cells which express the marker STRO-1^{bri}.

86. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the cultured and/or expanded population comprises at least 30% of cells which express the marker STRO-1^{bri}.

87. (Withdrawn) The cultured and/or expanded population of claim 84 wherein the cells which express the marker STRO-1^{bri} are proliferating cells.

88. (Withdrawn) The cultured and/or expanded population of claim 84 wherein the cells which express of the marker STRO-1^{bri} do not express markers associated with differentiated progeny.

89. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the cultured and/or expanded population comprises at least 5% of cells which express the marker STRO-1^{dull}.

90. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the cultured and/or expanded population comprises at least 10% of cells which express the marker STRO-1^{dull}.

91. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the cultured and/or expanded population comprises at least 30% of cells which express the marker STRO-1^{dull}.

92. (Withdrawn) The cultured and/or expanded population of claim 89 wherein cells which express the marker STRO-1^{dull} are positive for a marker associated with a differentiated cell selected from the group consisting of an osteoblast, odontoblast, dentin-producing cell, chondrocyte, tendon cell, ligament cell, cartilage cell, adipocyte cell, fibroblast cell, marrow stroma cell, osteoclast- and hematopoietic-supportive stroma cell, cardiac muscle cell, smooth muscle cell, skeletal muscle cell, pericyte, vascular cell, epithelial cell, glial cell, neuronal cell, astrocyte or oligodendrocyte cell.

93. (Withdrawn) The cultured and/or expanded population of claim 89 wherein cells which express the marker STRO-1^{dull} are positive for a marker selected from the group

consisting of collagen II, collagen IV, laminin, bone sialoprotein (BSP), osteocalcin (OCN), nestin, glial fibrillary acidic protein (GFAP), CBFA1, osterix (OSX), osteocalcin (OCN), Sox9, collagen X (COL X), leptin, GATA-4, transferrin (TFN) and flavin containing monooxygenase (FCM).

94. (Withdrawn) The cultured and/or expanded population of claim 83 wherein the MPCs are cultured and/or expanded by culturing in media supplemented with growth factors.

95. (Withdrawn) The cultured and/or expanded population of claim 94 wherein the growth factors are chosen from the group comprising, but not limited to, PDGF, EGF, FGF, IGF, VEGF and LIF.

96. (Withdrawn) A method of enriching for mesenchymal precursor cells (MPCs), the method including the step of preparing a single cell suspension from a vascularised source tissue and the step of enriching based on the presence of markers expressed in the vascularized tissue by peri-vascular cells.

97. (Withdrawn) The method of claim 96 wherein the vascularised source tissue is in the group consisting of skin, liver, kidney, heart, adipose tissue, teeth, dental pulp, retina, brain, hair follicles, intestine, lung, spleen, lymph node, thymus, pancreas, bone, ligament, bone marrow, tendon and skeletal muscle.

98. (Withdrawn) The method of claim 96 wherein the vascularised tissue source is a perivascular niche within a non-haemopoietic vascularised tissue.

99. (Withdrawn) The method of claim 96 wherein the step of enriching is based on the presence of the marker 3G5, MUC18/CD146 or STRO-1^{bri}.

100. (Withdrawn) The method of claim 96 wherein the step of enriching is based on the presence of one or more markers expressed by peri-vascular cells selected from the group comprising, but not limited to, THY-1, VCAM-1, ICAM-1, PECAM-1, CD49a/CD49b/CD29, CD49c/CD29, CD49d/CD29, CD29, CD61, integrin beta 5, 6-19, thrombomodulin, CD10, CD13, SCF, STRO-1^{bri}, PDGF-R, EGF-R, IGF1-R, NGF-R, FGF-R, Leptin-R (STRO-2).

101. (Withdrawn) The method of claim 96 wherein the step of enriching is based on the additional absence of a surface marker indicative of commitment or hematopoietic lineage differentiation.

102. (Withdrawn) The method of claim 101 wherein the cells do not express the hematopoietic markers CD34, CD45 or glycophorin A.

103. (Withdrawn) The method of claim 96 wherein the vascularized tissue source for the enrichment of MPC is selected from the group comprising, but not limited to, adipose tissue, teeth, dental pulp, skin, liver, kidney, heart, retina, brain, hair follicles,

intestine, lung, spleen, lymph node, thymus, pancreas, bone, ligament, bone marrow, tendon, and skeletal muscle.

104. (Withdrawn) The method of claim 96 wherein the vascularized source tissue for the enrichment of MPC is mammalian.

105. (Withdrawn) The method of claim 104 wherein the vascularized source tissue for the enrichment of MPC is human.

106. (Withdrawn) The method of claim 96 wherein the method further includes the step of culturing and/or expanding the population after enrichment.

REMARKS

Claims 68-81 are pending in the subject application with claims 82-106 withdrawn from consideration. Applicants have hereinabove amended claims 68, 71, and 77. Claim 77 was amended to correct a typographical error. Accordingly, claims 68-81 are now currently pending.

Support for the amendments to claims 68 and 71 can be found in the specification as originally filed at, *inter alia*, as follows: claim 68: page 1, lines 22-24; page 2, lines 26-27; page 10, lines 11-14; and original claim 1; and claim 71: page 3, lines 8-11; and page 10, lines 11-14. Accordingly, applicants maintain that amended claims 68, 71, and 77 introduce no new matter and are fully supported by the application as originally filed.

Rejection Under 35 U.S.C. 102(b) - Novelty

The Examiner rejected claims 68-81 under 35 U.S.C. 102(b) as being anticipated by Simmons et al. (1994, Advances in Bone Marrow Purging and Processing: Fourth Symposium 389, pages 271-280). The Examiner asserted that Simmons et al., teach an enriched cell population of mesenchymal precursor cells that are capable of giving rise to CFU-F and composition comprising said cells (see entire document, page 272 and Figure 2 in particular). The Examiner also asserted that Simmons et al., teach that said enriched cell population carry the antigen identified by STRO-1 antibody and that said cells are also positive for VCAM, LFA-3, THY-1, P-selectin, L-selectin, CD49b/CD29 surface markers (see Table 1 in particular). The Examiner further asserted that

Simmons et al., teach that said cells are capable of differentiation into at least adipocytes, osteoblasts and fibroblast (see Figure 1 in particular). The Examiner acknowledged that the reference is silent about that said enriched cell population of mesenchymal precursors are positive for cell markers 3G5 or MUC18/cd146, as recited in claims 71-76, or positive for one or more markers, recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony, as recited in claims 80 and 81. The Examiner asserted, however, that these limitations would be inherent properties (emphasis added) of the referenced cell composition because the referenced cell composition is allegedly the same as claimed. The Examiner asserted that it is applicants' burden to show that the reference cell population does not have the same properties as recited in the claims.

The Examiner also rejected claims 70 and 79 asserting that the claimed functional limitation would be allegedly inherent properties of the referenced enriched cell population and composition comprising said cells. The Examiner asserted that "[a] cell population is a cell population irrespective of their intended use or method of obtaining in the absence of evidence of structural difference." Therefore, according to the Examiner, the reference anticipates the claimed invention.

Applicants' Response

In response, applicants respectively traverse the Examiner's rejection. However, in order to expedite the prosecution of the subject application, applicants

hereinabove amended claims 68 and 71. Applicants submit that the present claims are limited to a population of MPCs that is enriched for the marker 3G5 and capable of giving rise to progeny consisting of two or more tissue types. As explained in the specification, this marker is particularly useful for isolating mesenchymal precursor cells (MPCs) from perivascular tissue, including non-haemopoietic vascularized tissue.

In contrast, Simmons et al. describe enrichment of STRO-1$^+$ cells from haemopoietic tissue, namely bone marrow, but nowhere does Simmons et al. suggest enriching for 3G5 positive cells.

Applicants submit that enrichment for 3G5 positive cells does not occur inherently in the method described in Simmons et al. As explained in the specification on page 26, lines 4 to 16, the marker 3G5 is highly expressed by a large population (54%) of hematopoietic marrow cells. However, only a minor proportion (14%) of MPCs (which give rise to clonogenic colonies) isolated from hematopoietic marrow cells express 3G5 (see Figure 4B). Accordingly, isolation of MPCs from bone marrow based on enrichment of cells expressing the STRO-1 marker as discussed in Simmons et al. does not result in an enrichment of the cells expressing the 3G5 marker. In fact the opposite occurs. The starting bone marrow cell population has a higher proportion of 3G5 positive cells than the isolated MPCs (see page 26, lines 6-12).

Accordingly, it is the applicants' position that (i) Simmons et al. do not teach all elements of the claimed invention; (ii) Simmons et al. do not inherently disclose all elements of the claimed invention; and (iii) the requirements for inherent anticipation have not been met in the rejection set forth.

With regard to point (iii), as noted in M.P.E.P. §706.02(a) "for anticipation under 35 U.S.C. 102, the reference must teach *every aspect* of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present" (emphasis added).

With regard to inherent anticipation, "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)", as cited in M.P.E.P. §2112. More specifically, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.*' In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)" (M.P.E.P. §2112) (emphasis added).

Accordingly, applicants submit that Simmons et al. do not inherently teach a population of MPCs enriched for 3G5

positive cells, as recited in the claims. Moreover, the Examiner has acknowledged that the reference is silent about cell marker MUC18/cd146 as recited in claims 71-74, or that the population is positive for one or more markers recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony as recited in claims 80 and 81. These limitations would not be inherent properties (to the extent an anticipation rejection based on inherency requires certainty) of the referenced cell composition because the referenced cell composition is not the same as the claimed invention as explained above. Similarly, the claimed functional limitation of claims 70 and 79 would also not be inherent properties of the referenced enriched cell population. Therefore, applicants submit that Simmons et al. do not anticipate the claimed invention.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Rejection Under 35 U.S.C. 102(e) - Novelty

The Examiner rejected claims 68-81 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,087,113 (issued to Caplan et al., 2000) as is evidenced by Simmons et al. (1994) or U.S. Patent No. 7,122,178 (issued to Simmons et al., 2006) or U.S. Patent Application No. 2005/0281790 or WO 01/04268.

The Examiner asserted that U.S. Patent No. 6,087,113 teaches an enriched cell population of mesenchymal

precursor cells and a composition comprising said cells. (see entire document, overlapping columns 3 and 4 in particular). The Examiner asserted that U.S. Patent No. 6,087,113 teaches that it is possible to get up to 95% of enriched cell population of mesenchymal precursor cells (see column 7, lines 10-25 in particular). The Examiner also asserted that U.S. Patent No. 6,087,113 teaches that said enriched cell population carry the antigen identified by STRO-1 antibody (see column 40, lines 21-35 in particular). The Examiner further asserted that U.S. Patent No. 6,087,113 teaches that said cells are capable of differentiation into cartilaginous and fibrous tissue (see overlapping columns 8 and 9 in particular).

The Examiner also asserted that U.S. Patent No. 7,122,178 teaches an enriched cell population of mesenchymal precursor cells, wherein said composition are enriched for STRO-1^{bright} cells and wherein said cells are capable of giving rise to CFU-F (see entire document, claims 1-13 in particular).

The Examiner also asserted that U.S. Patent Application No. 2005/0281790 teaches an enriched cell population of mesenchymal precursor cells, wherein said composition are enriched for STRO-1^{bright} cells and wherein said cells are capable of giving rise to CFU-F (see entire document, claims 52-78 in particular).

The Examiner acknowledged that the references (i.e. U.S. Patent Nos. 6,087,113 and 7,122,178, and U.S. Patent Application No. 2005/0281790) are silent about that said

enriched cell population of mesenchymal precursors are positive for cell markers 3G5 or MUC18/cd146, as recited in claims 71-76, or positive for one or more markers, recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony, as recited in claims 80 and 81. The Examiner asserted, however, that these limitations would be inherent properties of the referenced cell composition because the referenced cell composition is the same as claimed, and it is applicants' burden to show that the reference cell population does not have the same properties as recited in the claims.

The Examiner also rejected claims 70 and 79 asserting that the claimed functional limitation would allegedly be inherent properties of the referenced enriched cell population and composition comprising said cells. Therefore, according to the Examiner, the reference teachings anticipate the claimed invention.

Applicants' Response

U.S. Patent No. 6,087,113

In response, applicants respectively traverse the Examiner's rejection. The Examiner asserted that U.S. Patent No. 6,087,113 teaches that it is possible to get an enriched population of MPCs that carry the antigen identified by STRO-1 antibody. The Examiner referred in particular to column 40, lines 21-35. Applicants submit that the Examiner's interpretation of this patent is incorrect. The discussion at column 40, lines 21-35 merely states that the MSCs were probed with a STRO-1 antibody.

The results on Table 5 show that STRO-1 was in fact absent from the cell surface. This is confirmed in the paragraph bridging columns 40 and 41 which states:

> "Epitopes to markers that identify differentiated mesenchymal phenotypes are *not* detected by our analysis including those synthesized by chondrocytes (type II collagen, keratin sulphate (KS)), osteoblasts (Bone Gia Protein (BGP)), basement membrane fibroblasts (laminin, elastin and type IV collagen), marrow stromal cell progenitors *(Stro-1 antigen)* and endothelial cells (von Wilebrand factor)." [emphasis added]

In any event, the claims as modified refer to a population of MPCs enriched for 3G5 positive cells. This is not taught explicitly or inherently in U.S. Patent No. 6,087,113. Accordingly, it is the applicants' position that U.S. Patent No. 6,087,113 does not teach all elements of the claimed invention.

Moreover, the Examiner has acknowledged that the cited patent is silent about MUC18/cd146, as recited in claims 71 and 74, or that the population is positive for one or more markers, recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony, as recited in claims 80 and 81. These limitations would not be inherent properties (to the extent an anticipation rejection based on inherency requires certainty) of the referenced cells composition because the referenced cells are not the same as the claimed invention as explained hereinabove. Similarly, the claimed functional limitation of claims 70 and 79 would also not be inherent properties of the cell population disclosed in the prior

art. Therefore, applicants submit that U.S. Patent No. 6,087,113 do not anticipate the claimed invention.

Nonstatutory Obviousness-Type Double Patenting Rejection

Rejection Over U.S. Patent No. 7,122,178

The Examiner rejected claims 68-81 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 7,122,178. The Examiner stated that although the conflicting claims are not identical, they allegedly are not patentably distinct from each other because claims 1-13 of U.S. Patent No. 7,122,178 recited an enriched cell population, of mesenchymal precursor cells, enriched for STRO-1^{bright} cells, capable of giving rise to CFU-F.

Applicants' Response

In response, applicants submit that U.S. Patent No. 7,122,178 claims a population of cells enriched for STRO-1^{bright} cells, wherein the enriched cells are mesenchymal precursor cells capable of giving rise of progeny cells. For reasons discussed above, isolation of MPCs using the STRO-1 marker does not result in an enrichment of the cells expressing the marker 3G5. Accordingly, claims 68-81 are not obvious over claims 1-13 of U.S. Patent No. 7,122,178. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Rejection Over Co-pending Applications No. 11/169,875 and 10/553,633

The Examiner provisionally rejected claims 68-81 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 52-78 of co-pending Application No. 11/169,875. Although the conflicting claims are not identical, they allegedly are not patentably distinct from each other because claims 52-78 of co-pending Application No. 11/169875 recited an enriched cell population, of mesenchymal precursor cells, enriched for STRO-1^{bright} cells.

The Examiner also provisionally rejected claims 68-81 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 59-65 of co-pending Application No. 10/553,633. Although the conflicting claims are not identical, they allegedly are not patentably distinct from each other because claims 59-65 of co-pending Application No. 10/553,633 recited an isolated human stem cells population, wherein said cells expressed SRTO-1.

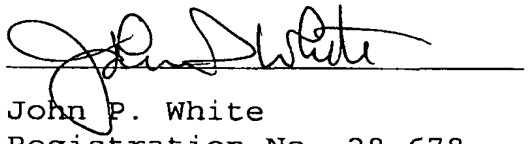
Applicants' Response

In response, applicants note that the current rejections are provisional as the cited applications are not patented or allowed. Accordingly, if these provisional rejections are the only outstanding rejections after entry of this amendment and consideration of the arguments presented herein, applicants request that these rejections be withdrawn.

If a telephone interview would be of assistance in advancing prosecution of the subject application, applicants' undersigned attorney invites the Examiner to telephone him at the number provided below.

No fee, other than the enclosed total fee of $735.00 (which includes $180.00 for an Information Disclosure Statement and $555.00 for a three-month extension of time for a small entity), is deemed necessary in connection with the filing of this Amendment and Supplemental Information Disclosure Statement. However, if any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,



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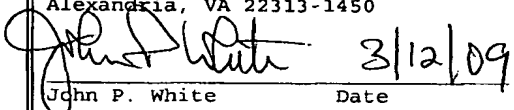

3/12/09

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